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TOWNSEND AND TOWNSEND AND CREW, LLP			DARE, RYAN A	
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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/651,681	NAGASHIMA ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Ryan Dare	2186

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 12/02/2005.  
 2a) This action is FINAL.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-8 and 10 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-8 and 10 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 12/02/05 is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
     1. Certified copies of the priority documents have been received.  
     2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
     3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

1. The replacement drawing sheet filed on 12/02/05 is approved.

### ***Specification***

2. The amendments to the specification filed on 12/02/05 are approved. The objections to the minor informalities in the specification are withdrawn.

### ***Response to Amendment***

3. In response to the amendments to the claims filed on 12/02/05: claims 1-8 and 10 have been amended and the corresponding 35 U.S.C. 112 rejections have been withdrawn.

### ***Claim Rejections - 35 USC § 103***

4. Claims 1-8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mutalik et al. (US Patent Pub. No. 2003/0005120 A1) in view of Fujiwara et al. (US Patent 6,557,073)

5. With respect to claim 1, Mutalik et al. disclose:

A control method for a storage system which comprises a plurality of information processing units, shown in fig. 1, reference numeral 112, also shown in fig. 4, reference numeral 310, and fig. 5, reference numeral 310. The host computer systems are examples of information processing units;

a storage device provided with a plurality of logical volumes, shown in fig. 4, reference numeral 306, and further in detail in fig. 5, reference numerals 302, 360 and 362. See the related discussion in par. 69;

and a user interface, in par. 104;

said control method comprising:

performing a first process in which when a data write request to a first logical volume is sent from the information processing unit to the storage device the storage device stores the data in the first logical volume and stores the data in a second logical volume, shown in fig. 5 and described in par. 59 and par. 66;

performing a second process in which the storage device suspends the first process, shown in fig. 11, numeral 902, and described in par. 85;

and shifting from the second process to the first process to perform the first process; when shifting from the second process to the first process to perform the first process, inquiring an information processing unit which can access the second logical volume, of whether said information processing unit mounts the second logical volume or not; deciding whether said information processing unit mounts the second logical volume or not, shown in fig. 12, numerals 1002 and 1004, and described in par. 90;

Mutalik et al. teaches the above limitations but does not appear to expressly teach outputting from a user interface when the information processing unit mounts the second logical volume, before shifting to the first process.

In a related art, Fujiwara et al. teaches:

when the information processing unit mounts the second logical volume, outputting that effect from said user interface before shifting to the first process, in fig. 9a, Mount End Message W4. Although the related discussion in col. 8 does not explicitly say that the message comprises outputting to a user interface, it is apparent that that is the intention of Fujiwara et al. In col. 11, lines 46-57, Fujiwara et al. discloses that the host computer has a display unit which displays information based on messages received at the host computer and allows a user to interact with the virtual storage.

6. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to use the display unit of the host computer to output the result of the mount end message, as is with the intention of Fujiwara et al., in order for the user to be able to interact and manipulate the system, as taught by Fujiwara et al. in col. 11, lines 53-57. Furthermore, it would be obvious to one of ordinary skill in the art, at the time the invention was made, to modify the storage system of Mutalik et al. with the storage system of Fujiwara et al. to give the user more control over actions of the storage system, such as receiving a mount end message at the host before writing data to storage, as illustrated in fig. 9a of Fujiwara et al.

7. With respect to claim 2, Mutalik et al. disclose:

A control method for a storage system which comprises a plurality of information processing units, shown in fig. 1, reference numeral 112, also shown in fig. 4, reference numeral 310, and fig. 5, reference numeral 310. The host computer systems are examples of information processing units;

a storage device provided with a plurality of logical volumes, shown in fig. 4, reference numeral 306, and further in detail in fig. 5, reference numerals 302, 360 and 362. See the related discussion in par. 69; and a user interface, in par. 104; said control method comprising: performing a process in which when a data write request to a first logical volume is sent from the information processing unit to the storage device the storage device stores the data in the first logical volume and stores the data in a second logical volume, shown in fig. 5 and described in par. 59 and par. 66; when the control is to be newly initiated between the first logical volume and the second logical volume, inquiring an information processing unit which can access the second logical volume, of whether said information processing unit mounts the second logical volume or not, deciding whether said information processing unit mounts the second logical volume or not, shown in fig. 12, numerals 1002 and 1004, and described in par. 90;

Mutalik et al. teaches the above limitations but does not appear to expressly teach outputting from a user interface when the information processing unit mounts the second logical volume, before shifting to the first process.

In a related art, Fujiwara et al. teaches: when the information processing unit mounts the second logical volume, outputting that effect from said user interface without being newly initiated between the first logical volume and the second logical volume, in fig. 9a, Mount End Message W4.

Although the related discussion in col. 8 does not explicitly say that the message comprises outputting to a user interface, it is apparent that that is the intention of Fujiwara et al. In col. 11, lines 46-57, Fujiwara et al. discloses that the host computer has a display unit which displays information based on messages received at the host computer and allows a user to interact with the virtual storage.

8. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to use the display unit of the host computer to output the result of the mount end message, as is with the intention of Fujiwara et al., in order for the user to be able to interact and manipulate the system, as taught by Fujiwara et al. in col. 11, lines 53-57. Furthermore, it would be obvious to one of ordinary skill in the art, at the time the invention was made, to modify the storage system of Mutalik et al. with the storage system of Fujiwara et al. to give the user more control over actions of the storage system, such as receiving a mount end message at the host before writing data to storage, as illustrated in fig. 9a of Fujiwara et al.

9. With respect to claim 3, Mutalik et al. disclose:

A control method for a storage system which comprises a plurality of information processing units, shown in fig. 1, reference numeral 112, also shown in fig. 4, reference numeral 310, and fig. 5, reference numeral 310. The host computer systems are examples of information processing units;

a storage device provided with a plurality of logical volumes, shown in fig. 4, reference numeral 306, and further in detail in fig. 5, reference numerals 302, 360 and 362. See the related discussion in par. 69;

and a managing computer, shown in fig. 1, numeral 102;

said control method comprising:

performing a first process in which when a data write request to a first logical volume is sent from the information processing unit to the storage device the storage device stores the data in the first logical volume and stores the data in a second logical volume, shown in fig. 5 and described in par. 59 and par. 66;

performing a second process in which the storage device suspends the first process, shown in fig. 11, numeral 902, and described in par. 85;

shifting from the second process to the first process to perform the first process; when shifting from the second process to the first process to perform the first process, inquiring an information processing unit which can access the second logical volume, of whether said information processing unit mounts the second logical volume or not; deciding whether said information processing unit mounts the second logical volume or not, shown in fig. 12, numerals 1002 and 1004, and described in par. 90;

Mutalik et al. teaches the above limitations but does not appear to expressly teach outputting form a user interface when the information processing unit mounts the second logical volume, before performing the first process.

In a related art, Fujiwara et al. teaches:

when the information processing unit mounts the second logical volume, outputting that effect from said user interface before performing the first process, in fig. 9a, Mount End Message W4. Although the related discussion in col. 8 does not explicitly say that the message comprises outputting to a user interface, it is apparent

that that is the intention of Fujiwara et al. In col. 11, lines 46-57, Fujiwara et al. discloses that the host computer has a display unit which displays information based on messages received at the host computer and allows a user to interact with the virtual storage.

10. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to use the display unit of the host computer to output the result of the mount end message, as is with the intention of Fujiwara et al., in order for the user to be able to interact and manipulate the system, as taught by Fujiwara et al. in col. 11, lines 53-57. Furthermore, it would be obvious to one of ordinary skill in the art, at the time the invention was made, to modify the storage system of Mutalik et al. with the storage system of Fujiwara et al. to give the user more control over actions of the storage system, such as receiving a mount end message at the host before writing data to storage, as illustrated in fig. 9a of Fujiwara et al.

11. With respect to claim 4, Mutalik et al. disclose:

A storage system control method according to claim 1, wherein when the information processing unit does not mount the second logical volume the storage device shifts from the second process to the first process to perform the first process, in par. 53. This paragraph describes that a replication (mirror) can be attempted even if a volume is not mounted, as some replication technologies do not allow a volume to be mounted.

12. With respect to claim 5, Mutalik et al. disclose:

A control method for a storage system which comprises a plurality of information processing units, shown in fig. 1, reference numeral 112, also shown in fig. 4, reference numeral 310, and fig. 5, reference numeral 310. The host computer systems are examples of information processing units;

a first storage device provided with a first logical volume in a first site, in fig. 5, numeral 362;

a second storage device provided with a second logical volume in a second site, in fig. 5, numeral 360;

said control method comprising:

performing a first process in which when a data write request to the first logical volume is sent from the information processing unit to the first storage device the first storage device stores the data in the first logical volume, the first storage device sends the data to the second storage device, and the second storage device which receives the data stores the data in the second logical volume, shown in fig. 5 and described in par. 59 and par. 66;

performing a second process in which the second storage device suspends the first process, shown in fig. 11, numeral 902, and described in par. 85;

the second storage device shifting from the second process to the first process to perform the first process; when shifting from the second process to the first process to perform the first process, inquiring an information processing unit which can access the second logical volume, of whether said information processing unit mounts the second logical volume or not; deciding whether said information processing unit mounts the

second logical volume or not, shown in fig. 12, numerals 1002 and 1004, and described in par. 90;

Mutalik et al. teaches the above limitations but does not appear to expressly teach outputting from a user interface when the information processing unit mounts the second logical volume, before shifting to the first process.

In a related art, Fujiwara et al. teaches:

when the information processing unit mounts the second logical volume, outputting that effect from a user interface before shifting to the first process, in fig. 9a, Mount End Message W4. Although the related discussion in col. 8 does not explicitly say that the message comprises outputting to a user interface, it is apparent that that is the intention of Fujiwara et al. In col. 11, lines 46-57, Fujiwara et al. discloses that the host computer has a display unit which displays information based on messages received at the host computer and allows a user to interact with the virtual storage.

13. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to use the display unit of the host computer to output the result of the mount end message, as is with the intention of Fujiwara et al., in order for the user to be able to interact and manipulate the system, as taught by Fujiwara et al. in col. 11, lines 53-57. Furthermore, it would be obvious to one of ordinary skill in the art, at the time the invention was made, to modify the storage system of Mutalik et al. with the storage system of Fujiwara et al. to give the user more control over actions of the storage system, such as receiving a mount end message at the host before writing data to storage, as illustrated in fig. 9a of Fujiwara et al.

14. With respect to claim 6, Mutalik et al. disclose:
15. A storage system control method according to claim 5, wherein when the information processing unit does not mount the second logical volume the storage device shifts from the second process to the first process to perform the first process, in par. 53. This paragraph describes that a replication (mirror) can be attempted even if a volume is not mounted, as some replication technologies do not allow a volume to be mounted.
16. With respect to claim 7, Mutalik et al. disclose:
  - A storage system connectable to a plurality of information processing units, shown in fig. 1, reference numeral 112, also shown in fig. 4, reference numeral 310, and fig. 5, reference numeral 310. The host computer systems are examples of information processing units;
  - a storage device provided with a plurality of logical volumes, shown in fig. 4, reference numeral 306, and further in detail in fig. 5, reference numerals 302, 360 and 362. See the related discussion in par. 69;
  - and a user interface, in par. 104;
  - said storage system comprising:
    - means for performing a first process in which when a data write request to a first logical volume is sent from the information processing unit to the storage device the storage device stores data in the first logical volume and stores the data in a second logical volume, shown in figures 4 and 5 and described in par. 59 and par. 66;

means for performing a second process in which the storage device suspends the first process, shown in figures 4 and 5, and the process shown in fig. 11, numeral 902, and described in par. 85;

means for shifting from the second process to the first process to perform the first process; means for inquiring an information processing unit which can access the second logical volume of whether the information processing unit mounts the second logical volume or not when shifting from the second process to the first process to perform the first process; means deciding whether said information processing unit mounts the second logical volume or not, shown in figures 4 and 5, where the process is described in fig. 12, numerals 1002 and 1004, and described in par. 90;

Mutalik et al. teaches the above limitations but does not appear to expressly teach outputting from a user interface when the information processing unit mounts the second logical volume, before shifting to the first process.

In a related art, Fujiwara et al. teaches:

means for, when the information processing unit mounts the second logical volume, outputting that effect from said user interface before shifting to the first process, in fig. 9a, Mount End Message W4. Although the related discussion in col. 8 does not explicitly say that the message comprises outputting to a user interface, it is apparent that that is the intention of Fujiwara et al. In col. 11, lines 46-57, Fujiwara et al. discloses that the host computer has a display unit which displays information based on messages received at the host computer and allows a user to interact with the virtual storage.

17. - It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to use the display unit of the host computer to output the result of the mount end message, as is with the intention of Fujiwara et al., in order for the user to be able to interact and manipulate the system, as taught by Fujiwara et al. in col. 11, lines 53-Furthermore, it would be obvious to one of ordinary skill in the art, at the time the invention was made, to modify the storage system of Mutualik et al. with the storage system of Fujiwara et al. to give the user more control over actions of the storage system, such as receiving a mount end message at the host before writing data to storage, as illustrated in fig. 9a of Fujiwara et al.

18. With respect to claim 8, Mutualik et al. disclose:

A managing computer connectable to a storage system which comprises a plurality of information processing units, in fig. 1, numeral 102 being the managing computer, the numeral 112 being the information processing units, and the numeral 110 being the storage system;

and a storage device provided with a plurality of logical volumes, shown in fig. 4, reference numeral 306, and further in detail in fig. 5, reference numerals 302, 360 and 362. See the related discussion in par. 69;

said managing computer comprising:

means for shifting from a second process to a first process to perform the first process, in par. 46, where it is disclosed that the IR server can include a replication policy manager with an IR daemon for controlling replication activity for storage units;

means for inquiring an information processing unit which can access a second logical volume of whether the information processing unit mounts the second logical volume or not when shifting from the second process to the first process to perform the first process, in the LAN 106 of fig. 1 which connects the IR server 102 to the application hosts 112;

wherein said first process is that the storage device stores a data in a first logical volume and also stores data in the second logical volume, wherein said second process that the storage device suspends the first process, in figures 4 and 5, and described in paragraphs 59 and 66; and

Mutalik et al. teaches the above limitations but does not appear to expressly teach outputting form a user interface when the information processing unit mounts the second logical volume, before shifting to the first process.

In a related art, Fujiwara et al. teaches:

means for, when the information processing unit mounts the second logical volume, outputting that effect from said user interface before shifting to the first process, in fig. 9a, Mount End Message W4. Although the related discussion in col. 8 does not explicitly say that the message comprises outputting to a user interface, it is apparent that that is the intention of Fujiwara et al. In col. 11, lines 46-57, Fujiwara et al. discloses that the host computer has a display unit which displays information based on messages received at the host computer and allows a user to interact with the virtual storage.

19. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to use the display unit of the host computer to output the result of the mount end message, as is with the intention of Fujiwara et al., in order for the user to be able to interact and manipulate the system, as taught by Fujiwara et al. in col. 11, lines 53-57. Furthermore, it would be obvious to one of ordinary skill in the art, at the time the invention was made, to modify the storage system of Mutalik et al. with the storage system of Fujiwara et al. to give the user more control over actions of the storage system, such as receiving a mount end message at the host before writing data to storage, as illustrated in fig. 9a of Fujiwara et al.

20. With respect to claim 10, Mutalik et al. disclose:

A computer-readable storage medium having a program for a managing computer in a storage system comprising a plurality of information processing units, shown in fig. 1, numeral 102 being the managing computer, the numeral 112 being the information processing units, and the numeral 110 being the storage system. The user desktop machines 108 contain a computer readable medium which contains IR application 108c and browser 108a, which combined, control the managing computer 102. In addition, the managing computer 102 and information processing units 112 also contain computer readable storage mediums containing code, as evidenced by the IR daemon 102c and the application agent 112b, respectively. The programs stored on these computers perform the functions as described below;

a storage device provided with a plurality of logical volumes, shown in fig. 4, reference numeral 306, and further in detail in fig. 5, reference numerals 302, 360 and 362. See the related discussion in par. 69;

said program comprising:

code for performing a first process in which when a data write request to a first logical volume is sent from the information processing unit to the storage device the storage device stores data in the first logical volume and also stores the data in a second logical volume, shown in fig. 5 and described in par. 59 and par. 66;

code for performing a second process in which the storage device suspends the first process, shown in fig. 11, numeral 902, and described in par. 85;

code for shifting from the second process to the first process to perform the first process, code for inquiring an information processing unit which can access the second logical volume of whether the information processing unit mounts the second logical volume or not when shifting from the second process to the first process to perform the first process, code for deciding whether the information processing unit mounts the second logical volume or not, shown in fig. 12, numerals 1002 and 1004, and described in par. 90;

Mutalik et al. teaches the above limitations but does not appear to expressly teach outputting from a user interface when the information processing unit mounts the second logical volume, before shifting to the first process.

In a related art, Fujiwara et al. teaches:

code for, when the information processing unit mounts the second logical volume, outputting that effect from said user interface of the managing computer before shifting to the first process, in fig. 9a, Mount End Message W4. Although the related discussion in col. 8 does not explicitly say that the message comprises outputting to a user interface, it is apparent that that is the intention of Fujiwara et al. In col. 11, lines 46-57, Fujiwara et al. discloses that the host computer has a display unit which displays information based on messages received at the host computer and allows a user to interact with the virtual storage.

21. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to use the display unit of the host computer to output the result of the mount end message, as is with the intention of Fujiwara et al., in order for the user to be able to interact and manipulate the system, as taught by Fujiwara et al. in col. 11, lines 53-57. Furthermore, it would be obvious to one of ordinary skill in the art, at the time the invention was made, to modify the storage system of Mutalik et al. with the storage system of Fujiwara et al. to give the user more control over actions of the storage system, such as receiving a mount end message at the host before writing data to storage, as illustrated in fig. 9a of Fujiwara et al.

#### ***Response to Arguments***

22. Applicant's arguments, see pages 12-14, filed 12/02/05, with respect to claims 4 and 6 have been fully considered and are persuasive. The rejections under 35 U.S.C.

112 of claims 4 and 6 have been withdrawn. In light of Applicant's arguments, these claims are rejected under the original Mutalik reference, as discussed above.

23. Applicant's arguments, see pages 14-15, filed 12/02/05, with respect to the rejection(s) of claim(s) 1-3, 5, 7 and 10 under 35 U.S.C. 102 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the combination of the Mutalik reference with Fujiwara et al., US Patent 6,557,073. Although it could be considered obvious that the when the Mutalik reference says "notification" it means notification to the user through a user interface, such as described in paragraphs 51 through 57, the Examiner now believes this does not constitute a rejection under 35 U.S.C. 102. The Fujiwara reference makes it apparent that it is obvious to output from a user interface after mounting a logical volume. Consequently, the combination of Mutalik et al. and Fujiwara et al. teach the present invention.

### ***Conclusion***

24. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan Dare whose telephone number is (571)272-4069. The examiner can normally be reached on Mon-Fri 9:30-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim can be reached on (571)272-4182. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ryan Dare  
January 5, 2006



MATTHEW D. ANDERSON  
PRIMARY EXAMINER